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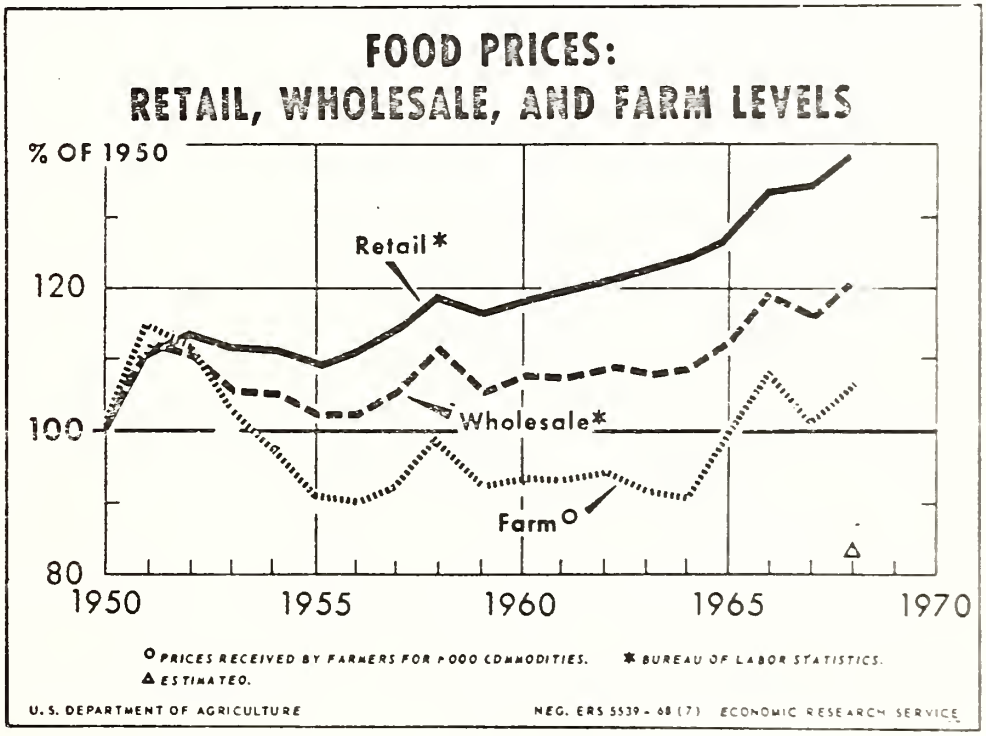
NATIONAL FOOD SITUATION

NFS-126 NOVEMBER 1968

Retail food prices this year reflect strong consumer demand and inflationary pressures that reach all the way back to raw farm products. In addition, higher costs of labor and other marketing inputs and expanded profits are leading to wider farm-retail marketing margins. Higher restaurant food prices are also contributing to the 3-1/2% retail price gain for all food in 1968.

Prices received by farmers for food products (farm value of the market basket) this year are averaging significantly higher than last year's reduced level but below that of 1966. Reduced supplies of fruits and fresh vegetables added to price pressures. Wholesale food prices also are rebounding.



ERS 404

IN THIS ISSUE

Outlook Through Mid-1969

U.S. Food Consumption: Annual Disappearance Versus Survey Data

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ERS 404

NFS-126

NOVEMBER 1968

U.S. FOOD CONSUMPTION: ANNUAL DISAPPEARANCE AND HOUSEHOLD SURVEY DATA

Data from the 1955 and 1965 household food consumption surveys provide a unique opportunity to amplify annual estimates of food consumption derived on the basis of "disappearance," using complete supply and utilization balance sheets. Data from these two independent sources are mutually supporting for many commodities after careful adjustment to allow for differences in concepts and methods of reporting. However, since each set of data had its own purpose and procedures, some of the differences are not reconcilable.

Each set of data has certain inherent advantages as well as limitations. Neither source precisely measures the food Americans are actually eating. Both measure food on the basis of sale at retail store or as brought into the kitchen.

The "disappearance" data provide a reasonably consistent measure of changes in consumption over time because data are collected annually and they approximate an accounting of total food supply and utilization. But these data are available only in terms of products in primary form. They are not available for many individual food items, and have no cross-sectional breakdown.

The surveys permit cross-sectional analyses of differences in consumption between city and farm people, among regions, and among groups classified by socio-economic factors such as income, age, and household size. Information on such cross-sectional differences is useful in explaining changes over time that are observed from the time-series data. For example, they are useful in refining predictions where projected changes in residence and other characteristics of the population can be estimated. But the survey data are most useful for in-depth analysis of consumption at sampled points in time that may not necessarily be indicative of trends.

For example, on the basis of data as reported (which cover the months of April, May, June), the surveys suggest more of a decline in consumption of dairy products and vegetables and a smaller rise in consumption of poultry than do the annual disappearance data. However, the survey data indicate much less of a decline in consumption for eggs and more of a rise for meat than trends in the annual data would support. This report will refine these gross relationships by adjusting the data to be as conceptually consistent as possible.

Differences in Data

Time-series data are derived as residuals from estimates of production or marketings of farm products, foreign trade, stock changes, and nonfood uses and are presented in terms of retail weights of foods in primary form. Survey data are obtained by interviewing homemakers on food used in the household during the preceding week and are reported in the form in which the food entered the home.

Food consumption data from the survey, shown in table 17, have been adjusted to match the time-series data insofar as possible for comparability in form, consistency in classification, and the inclusion of indirect uses. However, no adjustments were made for seasonality because of the lack of information available at this time.

Direct and Indirect Uses

The American market contains a myriad of prepared and partially-prepared foods which combine numerous farm products. The homemaker being interviewed reported all of these foods in terms of final products. Published survey data do not isolate the ingredients of mixed foods. For comparison with the primary products in the time-series data, foods such as bakery products, flour mixes, jellies, soft drinks, ades and punches, mixtures, soups, potato chips, and breakfast cereals were broken

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1/ By Corinne Le Bovit, Food Consumption Section, ERS.

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Table 17.--Per capita food consumption: Annual disappearance 1/and household food consumption surveys 2/

Food	Annual disappearance retail weight, equivalent		Household food consumption surveys, spring				Percentage difference, survey (adjusted) to time series	
			As published 3/		Adjusted 4/			
	1955	1965	1955	1965	1955	1965	1955	1965
	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Percent	Percent
Meat	152.2	148.0	157.6	174.6	158.3	175.2	4	18
Poultry	26.7	41.2	36.5	44.4	34.9	46.5	31	13
Fish, shellfish	12.9	13.9	20.6	19.1	16.8	15.2	30	9
Eggs	46.9	39.8	43.8	42.5	46.5	46.9	-1	18
Dairy products, excluding butter:								
Product weight	398.0	366.0	429.6	367.7	431.5	370.7	8	1
Calcium equivalent	524.6	503.1	501.4	454.7	537.0	493.7	2	-2
Fats and oils, including butter	49.2	50.7	46.3	42.7	50.9	50.7	3	0
Melons	33.0	25.4	17.6	26.1	17.6	26.1	-47	3
Fruits,including olives, baby food	145.3	130.0	191.0	168.3	198.1	177.9	36	37
Potatoes, sweetpotatoes:								
Product weight	113.7	104.1	97.2	84.8	97.2	83.4	-14	-20
Fresh equivalent	115.0	112.9	104.1	101.3	105.3	102.4	-8	-9
Vegetables, including pickles, relish, baby food, soup	211.2	206.5	203.3	183.9	207.5	191.2	-2	-7
Dry beans, peas, nuts	16.2	16.6	15.0	21.3	12.9	15.6	-20	-6
Flour, cereal, baked goods	152.0	144.0	196.1	194.8	148.7	135.9	-2	-6
Sugars, sweeteners	106.3	111.4	64.7	58.5	78.5	84.2	-26	-24
Coffee, tea, cocoa	15.0	15.1	15.3	14.7	17.6	17.1	17	13
Mixtures	---	---	23.9	30.8	---	---	---	---
Soft drinks, fruit ade, punch, nectar	---	---	46.8	96.5	---	---	---	---
Leavening	---	---	1.7	.5	3.9	2.7	---	---

1/ Food Consumption, Prices, and Expenditures, Agricultural Economic Report No. 138, July 1968.
2/ Household Food Consumption Surveys, 1955 and 1965-66, Report 1.
3/ Average quantity per person per week in spring multiplied by 52.
4/ Form adjusted to that of time-series data; indirect uses included.

down into ingredients using the best available factors for each identified food item. A considerable quantity of sugar, flour, and fats and lesser quantities of nearly all other food categories entered the home as ingredients of final products.

Consistent Form

The time-series data convert each item to a consistent, specified primary form. But the survey data report consumption in the variety of forms in which the food was obtained. For example, poultry in the time-series data is reported on a ready-to-cook equivalent basis, and fish and shellfish on an edible weight basis. For comparability, live-weight poultry, whole fish, and the shellfish tabulated as "in shell" by the survey were each converted to the primary form reported in the time-series data. Other items for which similar adjustments were made included cocoa products in various forms converted to beans, salad dressing to oil, dehydrated vegetables to fresh, and baked beans to dry edible beans.

Classification

A few items are grouped differently in the survey than in the time-series data. For example, canned baked beans were classified with canned vegetables rather than with dry beans and peas. Melons are with fruit rather than shown separately. For comparability, these foods were reclassified to the food groups used in reporting time-series data.

Effects of Different Coverages

Season

The survey in 1955 covered only the spring quarter. The 1965-66 survey covered all 4 quarters but, so far, only data for spring 1965 are available. To the extent that use in the spring differs from the average for the year, the survey data would be expected to differ from the time-series data.

Seasonal indexes, calculated from household survey data collected in cities in 1948 and 1949, were used in this analysis as a rough guide of the probable effects of seasonality.8/ Present day seasonal differences are probably less than they were 20 years ago but some seasonality persists. Data for 1965 will be adjusted for seasonality when data for the 3 quarters following spring 1965 become available. However, since the 1955 data are available only for the spring quarter, the implied 1955-65 trend will not be affected by later data.

Egg consumption is probably slightly higher in the spring than during the rest of the year. Consumption of grain products, sugar, vegetables, and potatoes is probably somewhat lower. If adjustments were made for expected seasonal differences, most survey and time-series averages would be closer than indicated in table 17, but not for fruits and melons.

Household Use at Home

The surveys report only food consumed by housekeeping households (defined as those in which at least one person ate a minimum of 10 meals from household food supplies during the week preceding the interview). Excluded are people in group quarters (about 1.5% of the population in 1965) such as rooming houses, hospitals, and prisons, and those in non-housekeeping households (about 3-4% of the population in 1965). These exclusions probably have little effect on average consumption per person.

Members of the households surveyed reported only food consumed at home or carried from home in packed lunches. An adjustment was made to yield total consumption by counting each 21 meals served in the household as a person rather than using the actual number of persons for per-person averages. Such an adjustment

8/ Faith Clark, et al., Food Consumption of Urban Families in the U.S., AIB 132, 1954, tables 52 and 53.

implicity assumes that average consumption per meal eaten out is approximately the same as average consumption per meal eaten at home. For most broad groups of foods this assumption is probably reasonable.

In spring 1965 a higher proportion of family meals was eaten out than in 1955. But the proportion of meals served to nonfamily members was about the same in both surveys.

Item Coverage

The time-series data omit forest and nursery products, game birds, minor commercial fruits, and fruit consumed on farms where produced. The time-series data also exclude beer, wines, and spirits. Since these alcoholic beverages are shown separately in the survey data, they are excluded in making comparisons.

The surveys include yeast, baking powder, and other food additives as part of the foods in which they are ingredients. Also, leavenings, vinegar, artificial sweeteners, salt, and seasonings purchased during the week of the survey were included. The time-series data omit all such products. Quantitative effects of such differences are insignificant, but nutritional effects of some products, such as those which contain calcium (most baking powders, dough conditioners and mold inhibitors in baked goods) can be significant.

Some Differences Remain

As indicated, some differences between the two sets of data shown in table 17 likely would disappear if the data were adjusted for seasonal effects. However, 1965 survey data probably would continue high in relation to time-series data for meat, poultry, fish, eggs, melons, and fruit--and low for sugars. Discussion follows on some of the possible explanations for these differences.

Survey Data Methodology

Some of the meat, fruit, and melon consumption data were reported in terms of physical dimensions rather than pounds. In those cases, pounds were derived using factors for weight per cubic inch. The procedure--which differed from that used in 1955--could be responsible for part of the discrepancy in consumption from the time-series data. This hypothesis appears to be corroborated for meat by the relatively large proportion of steak to total beef reported by the survey in 1965.

Another possible problem may have been the homemaker's inability to distinguish between fruit juices and fruit drinks, punches, and ades containing juice diluted with water or entirely synthetic. Considerable effort was made to get accurate identification of these products--by the use of trade names and by calling attention to the problem.

However, the survey data show fruit juice consumption to be a significantly larger proportion of total fruit in 1965 than in 1955, which is contrary to relationships based upon the time-series data. Many more fruit drinks and similar products were on the market in 1965 than in 1955. Therefore, overestimation of fruit juice may have been greater in 1965.

Sugar, a more important ingredient of drinks and ades than of juices, may have been underestimated in 1965 along with the underestimation of drinks and ades. Sugar consumption appears to be consistently underestimated in surveys for other reasons, too. It is impossible to measure all of the sugar used in various processed foods. Understatement of between-meal consumption at home of items such as candy, soft drinks, ades, and popsicles is probable. And, the implicit assumption that consumption away from home is proportional to that at home is more of a problem for these foods.

Time-Series Data Problems

Comparisons with unpublished estimates of animal products used on farms where produced show lower home consumption of meat, poultry, fish, and eggs on farms in the time-series data than reported by the surveys. These differences would account for most of the difference in consumption of poultry, fish, and eggs between the two sets of data if the survey data were assumed to be correct.

The time-series data include no estimates for consumption of home-produced tree fruits and berries nor those picked wild. Minor commercial items also are omitted. But survey data include all such products. Addition of this consumption to the time-series data narrows the difference in fruit consumption, but a large difference still remains.

No deduction is made in the time-series data for some nonfood uses of sugars and sweeteners (such as cough drops, medicines, tobacco). Quantities embodied in imported and exported processed foods are also essentially omitted. More unreported sugar is likely contained in imported processed foods than in exports. The omissions result in some overestimation of sugar consumption.

Other problems in the estimation of time-series consumption may result from incomplete information on nonfood uses, stocks, and military uses. 9/ Furthermore, a set of constant waste factors is used in converting quantities of some products from primary weight to their retail equivalents. Changes in physical efficiency of marketing and varying levels of uses or stocks not covered would bias the trends in the time-series data.

Trends in Consumption

The reliability of a trend based upon 2 points in time depends upon the closeness of the 2 points to the long-term trend. Aside from possible measurement and sampling errors, three potential sources for error exist in drawing conclusions about trends based on household surveys taken during a single quarter at isolated points in time: (1) Extent to which consumption in the survey years departs from the long-term trend, (2) existence of seasonality in consumption and changes in seasonality between the periods surveyed, and (3) methodological difference between surveys due to such things as changes in definitions and survey techniques.

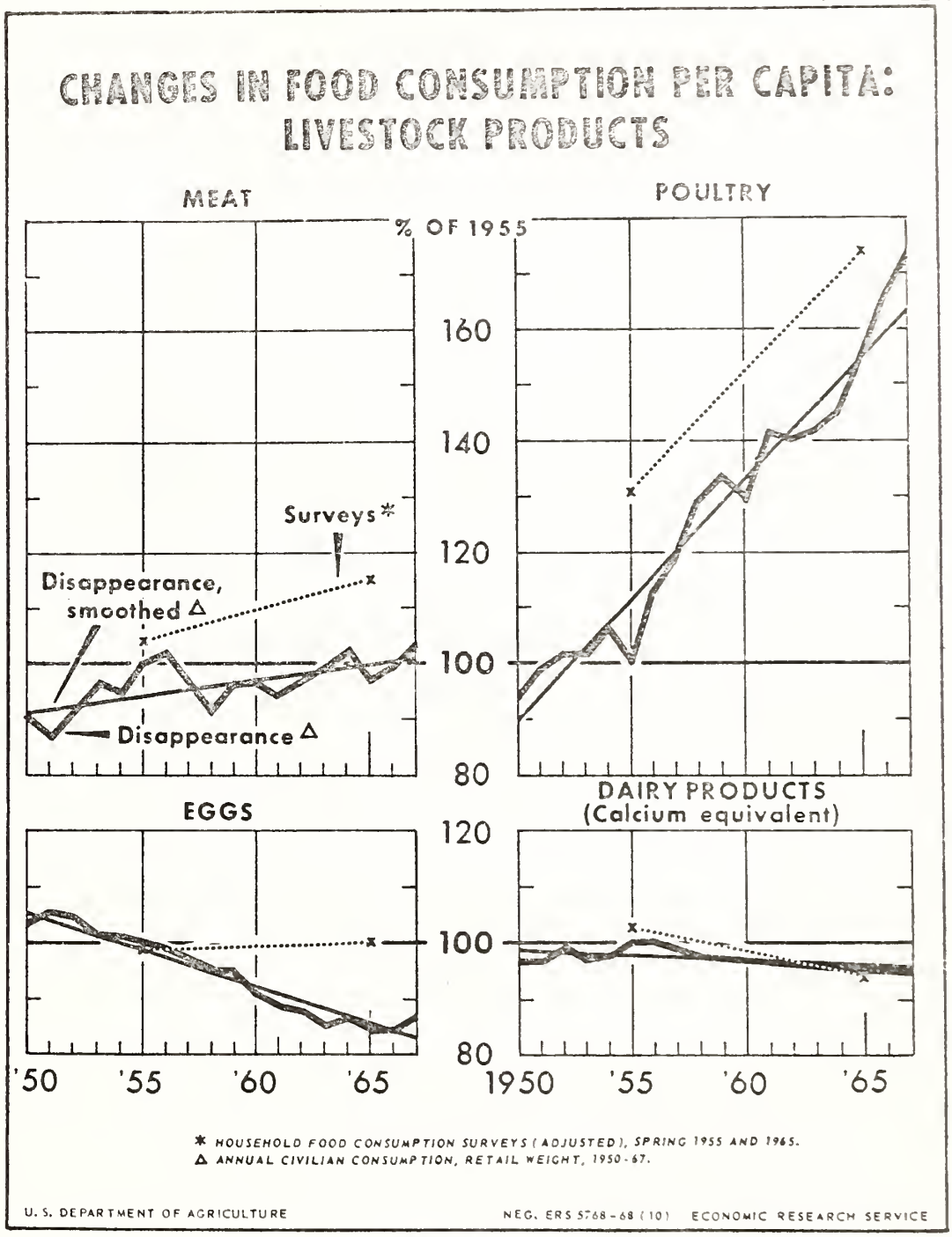
Variations in trends in consumption comparing annual disappearance and household survey data are shown in table 18 and figures 15, 16, and 17. To show trends, time series data for the years, 1950-67 were fitted statistically by "least squares". Household food consumption survey data (as adjusted) for spring 1955 and 1965 are shown in the charts as two points joined by a dotted line so that implied trends can be visually compared with the time-series trend.

For potatoes and sweetpotatoes, the 2 sets of data imply different trends. Time-series "disappearance" data show that consumption in 1955 was high and 1965 low relative to the 1950-67 trend. The surveys show consumption to be lower by about the same amount in each of the 2 years. But since the 2 years were not on the time trend, the survey data alone would imply a slight downtrend while the time-series show a slight uptrend.

For poultry, fruit, flour and cereals, and sugars and sweets the trends implied by the 2 sets of data are closely parallel even though the levels differ. The level of consumption based on the survey data was higher for fruits and poultry, and lower for sugar and sweets.

For eggs, melons, fish and shellfish, and the dry beans, peas, nuts group, time trends based on the 2 surveys differ greatly from the time trend based on annual data. The implied trends for vegetables and fats and oils also differed, but to a lesser degree.

9/ U.S. Food Consumption, Statistical Bulletin No. 364, June 1965


CHANGES IN FOOD CONSUMPTION PER CAPITA:
LIVESTOCK PRODUCTS
MEAT
POULTRY
% OF 1955
160
140
120
100
80
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Disappearance, smoothed Δ
Disappearance Δ
EGGS
DAIRY PRODUCTS
(Calcium equivalent)
120
100
80
'50
'55
'60
'65
1950
'55
'60
'65
* HOUSEHOLD FOOD CONSUMPTION SURVEYS (ADJUSTED), SPRING 1955 AND 1965.
Δ ANNUAL CIVILIAN CONSUMPTION, RETAIL WEIGHT, 1950-67.
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 5768-68 (10) ECONOMIC RESEARCH SERVICE

Figure 15

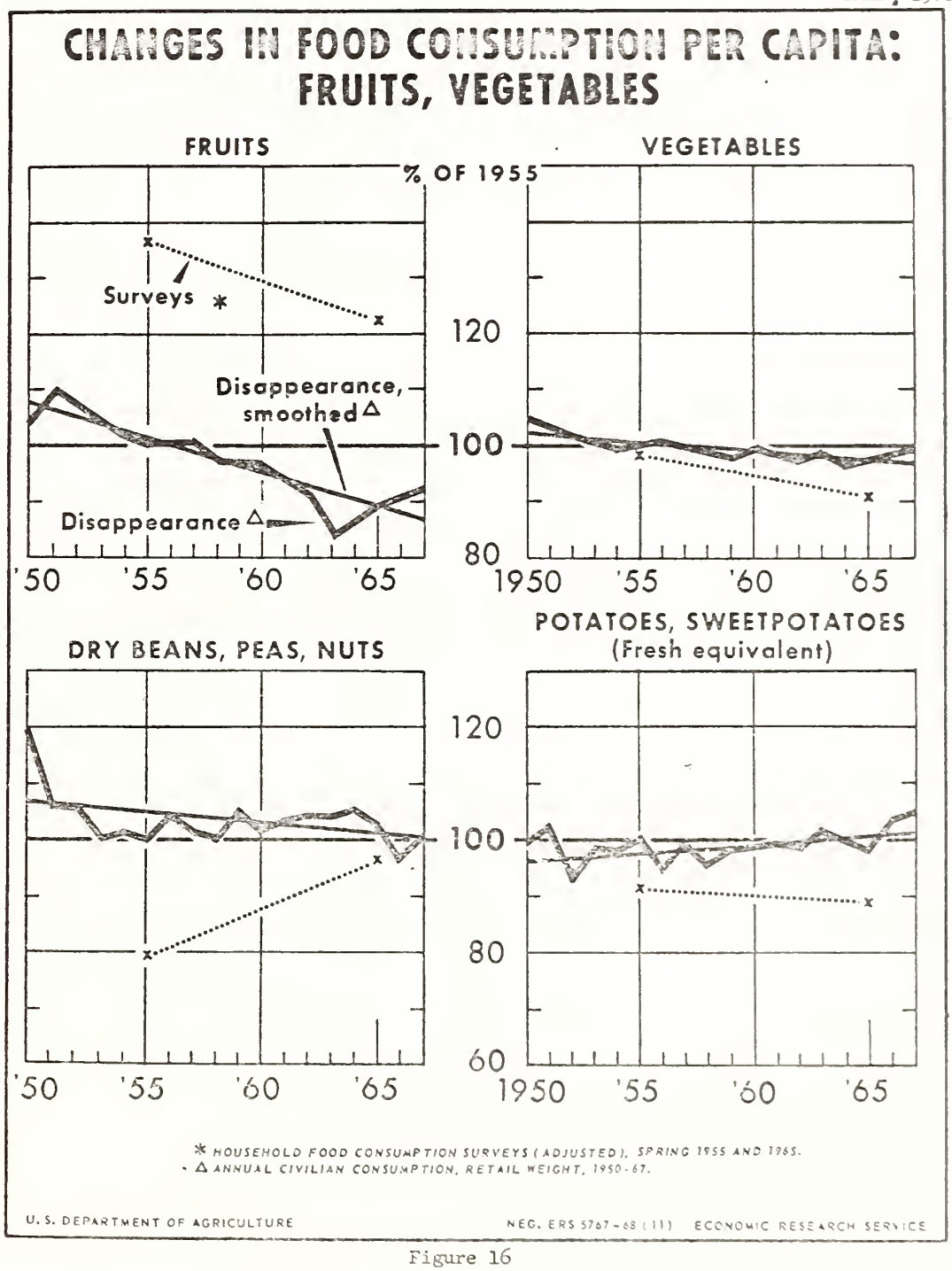
CHANGES IN FOOD CONSUMPTION PER CAPITA:
FRUITS, VEGETABLES
FRUITS
% OF 1955
Surveys *
Disappearance, smoothed Δ
Disappearance Δ
120
100
80
'50
'55
'60
'65
VEGETABLES
1950
DRY BEANS, PEAS, NUTS
POTATOES, SWEETPOTATOES
(Fresh equivalent)
60
* HOUSEHOLD FOOD CONSUMPTION SURVEYS (ADJUSTED), SPRING 1955 AND 1965.
Δ ANNUAL CIVILIAN CONSUMPTION, RETAIL WEIGHT, 1950-67.
U. S. DEPARTMENT OF AGRICULTURE
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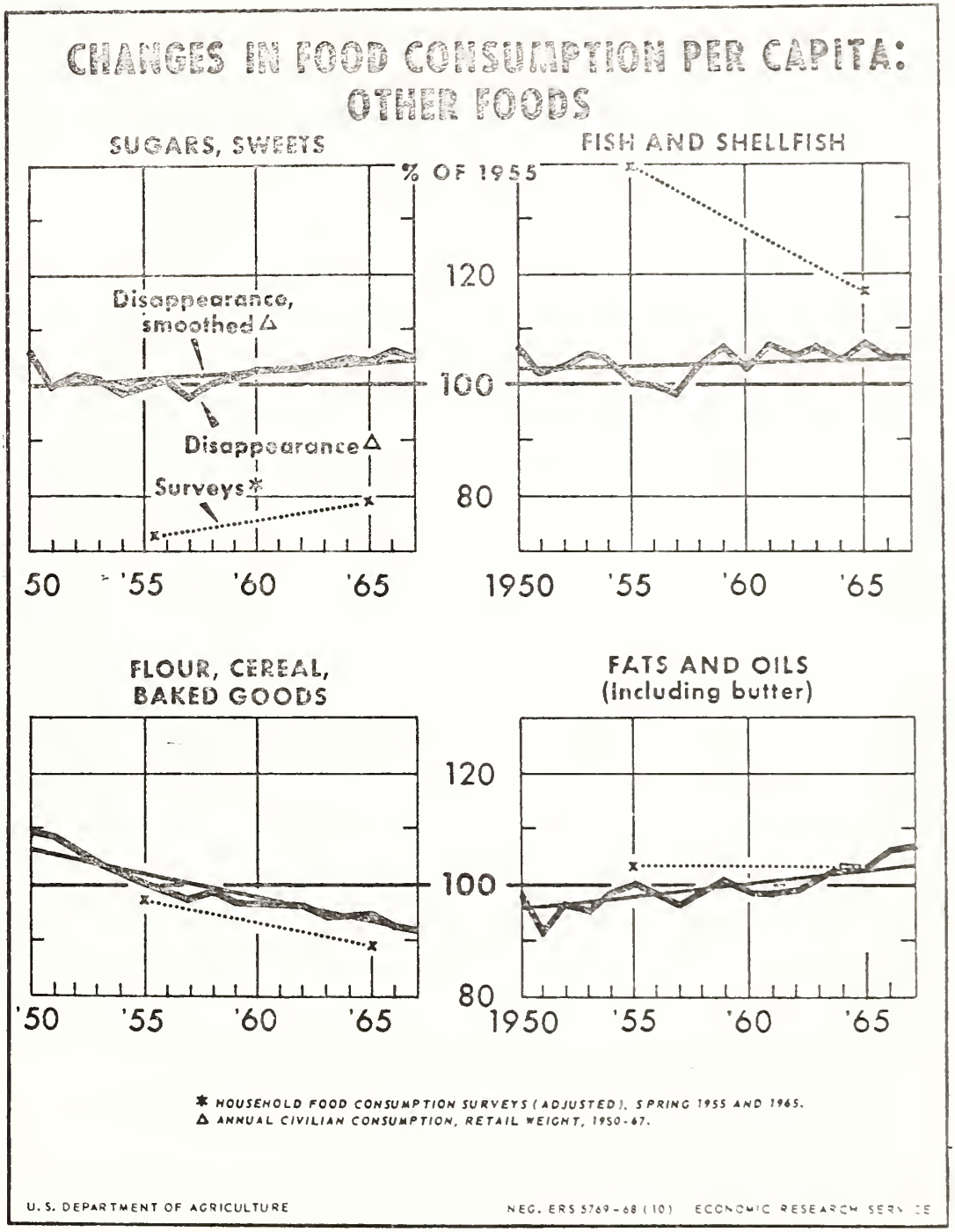
Figure 16


CHANGES IN FOOD CONSUMPTION PER CAPITA:
OTHER FOODS
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% OF 1955
Disappearance, smoothed △
Disappearance △
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FISH AND SHELLFISH
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FATS AND OILS (including butter)
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100
80
1950
'55
'60
'65
* HOUSEHOLD FOOD CONSUMPTION SURVEYS (ADJUSTED), SPRING 1955 AND 1965.
△ ANNUAL CIVILIAN CONSUMPTION, RETAIL WEIGHT, 1950-67.
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 5769-68 (10) ECONOMIC RESEARCH SERVICE

Figure 17

Table 18.--Annual changes in per capita food consumption

Food	Annual disappearance (least squares trends)		Household surveys (adjusted) spring 1955 to spring 1965
	1950-1967	1955-1965	
	Pounds	Pounds	Pounds
Meat	0.8	0.1	1.7
Poultry	1.1	1.2	1.2
Fish, shellfish	1/	.1	-.2
Eggs	-.6	-.8	1/
Dairy products (calcium equivalent)	-.8	-2.3	-4.3
Fats and oils (including butter)	.2	.2	1/
Melons	-.5	-.7	.8
Fruits	-1.6	-2.3	-2.0
Potatoes, sweetpotatoes (fresh equivalent)	.2	.3	-.3
Vegetables	-.7	-.6	-1.6
Dry beans, peas, nuts	-.1	1/	.3
Flour, cereal, baked goods	-1.3	-.8	-1.3
Sugars, sweeteners	.2	.6	.6

1/ Plus or minus 0.05 or less pounds.

Meat consumption also is shown to differ significantly on the basis of the 2 sets of data. In this case, there are some compensating variations that combined to imply similar trends over time. In 1965, survey data exceeded the annual data much more than in 1955. However, the annual data for these 2 years departed from the 1950-67 trend in the opposite direction--higher than the trend in 1955 and lower in 1965. The combined result was a pair of similar trends. But, the level of consumption was higher on the basis of the survey data.

For dairy products, consumption in the spring quarter was high in relation to the rest of the year in 1955; it was relatively low in 1965. In addition, annual data show 1955 above and 1965 below the long-term trend. The surveys reflect both of these variations and, as a result, show a faster rate of decline than actually took place.

Conclusions

Food consumption data derived from household surveys were compared with time-series data after adjustments were made for consistency covering indirect uses, form in which reported, and classification of food groups. Foods with a high proportion of indirect uses included dairy products and eggs. Those that appeared to be most in need of adjustment for consistent form included flour, cereals, and baked goods; dry beans, and peas; and fishery products. Sugars and sweets and fats and oils required both adjustments. It was not possible at this time to make explicit allowances for seasonality and the pattern of food consumed away from home.

After adjustment, trends in consumption implied by the survey data were usually consistent with those based on time-series "disappearance" data for most of the important food groups. But there were some important exceptions. Data from the 2 sources were less consistent in measuring level of consumption. These provisional conclusions are subject to reexamination when household survey information on seasonality becomes available for 1965 and information on away-from-home eating emerges from an industry survey currently being conducted.

Meanwhile, time-series data would be appropriate to use if the objective is to determine trends in food consumption. Cross-sectional interrelationships based on the surveys can be applied to the time-series data in analyzing effects on consumption of such important factors as levels of income, degree of urbanization, region, size of family and substitution of individual food commodities. Used together the 2 sets of data supplement each other in the analysis of food consumption.